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AUTHOR Rahmlow, Harold F.; Dunn, James A.
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ABSTRACT

PLAN is an ungraded, computer supported, individualized program of education. This paper discusses the development of this program year by year. The first two years were limited, both in curriculum and content pacing. The third year was much more comprehensive. The fourth year will involve all grades, and will have lessons which are behaviorally and discretely defined, information about students, and rules for the use of this information. A program of study is developed by checking state and local school system requirements, the students academic history, and the students academic foundations. A core content of the students program is then set up. At the secondary level, this program is aimed at providing the student with preparation for at least two major long term goals which have been decided upon by him and his parents. The examples given in the second booklet on using student performance data show the data upon which revisions of PLAN modules were made as well as student performance on the revised materials. By first examining summary results for all items for an objective, it is possible to determine whether or not the general level of performance if acceptable, and further whether results indicate general misconceptions or errors in the instructional material itself. (SJ)

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SOME RESULTS OF USING STUDENT PERFORMANCE DATA FOR IMPROVEMENT OF INDIVIDUALIZED INSTRUCTIONAL UNITS [1]

Harold F. Rahmlow [2]

American Institutes for Research

Introduction

The overall goal of any educational system should be the improvement of educational results. In order to improve educational results effectively and efficiently, there should be a strong emphasis on student performance data.

In the paper, "Use of Student Performance Data for the Improvement of Individualized Instructional Materials," read last year to the American Psychological Association, the kinds of data used to refine the individualized instruction program and illustrations of this procedure were presented (Rahmlow, 1969). The purpose of the present paper is to look at some of the results of revision work.

1 Presented as part of a symposium: PLAN in Operation – A Summary of Four Years' Experience in the Evolution of an Educational System for Divisions 5 and 15, American Psychological Association, Miami Beach, Florida, September 5, 1970.

2 Now associated with The American College of Life Underwriters, Bryn Mawr, Pennsylvania.

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Background

PLAN is a data-based system of individualized education. Previous papers give detailed background on the project (Dunn, Flanagan, Jung, Rhetts, Webster, and Wright in Education, 1970; Weisgerber, in press).

The basic organizational unit of PLAN is the module. A module consists of a set of behavioral objectives, learning activities for the student, and criterion-referenced test items for evaluation. Students are provided with documents called teaching-learning units (TLU's) in which, in most cases, student objectives are stated along with a specification of the resources a student might use and the activities he might pursue as he works toward the achievement of the stated objective. Figure 1 shows portions of two PLAN TLU's. When the student feels that he can perform the objectives of the module, he is given an module test. Student responses are submitted for computer processing, and the results of this evaluation are reported on an overnight basis to the student and are also stored for future reference.

One of the uses of the stored data is for revision of the instructional program. The test data can then be retrieved and summarized by individual item and by objective, thus making it possible to evaluate the overall level of student performance on an objective as well as to evaluate student performance on individual test items.

Because the system strives to assist students to master objectives, criterion-referenced rather than norm-referenced evaluation is appropriate. The distribution of summary scores of items for an objective should show a marked skewing in favor of correct responses. Likewise, individual items should be at the seventy to ninety percent difficulty level.

Example: Test Revision

If data on student performance indicate that the students are not accomplishing a particular objective, the problem can be attributed either to the student himself or to the system. During initial development, it is best to attribute random failure to students and mass failure to the system. If a problem is first analyzed for deficiencies in the instructional system, it is necessary to look at not only the instructional units but also the evaluation items. First we will examine a case which illustrates a problem requiring the revision of the evaluation instruments.

Let's consider a portion of a science module used by students who are in approximately their fifth year of school. The module is entitled, "Science of Learning: Forgetting and Relearning." The objective under consideration is, "Tell which variables were controlled in an experiment on forgetting and relearning." Figure 2 shows a portion of a test that includes a described experiment used to evaluate the student's ability to perform the objective. Figure 3 summarizes student performance on all

five items for the objective. It can be seen that the distribution is more the type of a distribution that would be expected from a normative rather than from a criterion-referenced evaluation situation. The distribution indicated that very few students were really mastering the objective. It would seem desirable to investigate student performance on the individual items which have been summarized for Figure 3. Figure 4 shows the percent of students responding correctly to each of the individual items of the test. Items 8 and 10 do not seem to be providing a great deal of difficulty, whereas items 7, 9, and 11 are most likely the ones that are contributing heavily to the poor student performance noted in the summary in Figure 3.

An examination was made of the teaching-learning unit and of the individual evaluation items themselves. The teaching-learning unit seemed to be providing sufficient information and practice for the student to be able to acquire the behaviors necessary to perform well on the criterion items. One hypothesis advanced for the poor student performance was that the students were not able to pick out the significant information in the test item itself. The test item stimulus was modified as shown in Figure 5 to attempt to highlight the essential information. Furthermore, item 11 was eliminated from the test because there was not sufficient information provided within the stimulus upon which the student could make a definitive response.

Figure 6 summarizes the student performance on the four items for the revised test. As can be seen, the student performance has improved considerably, but there still is room for improvement. Again, an analysis

was made of the individual items. Figure 7 illustrates this analysis. Item 7 is causing the most difficulty and is probably the major contributor to the somewhat depressed performance on the total objective. As can be seen from the revised test question, the information that is necessary for the student to answer item 7 has been highlighted; therefore, it could be concluded that whereas highlighting significant information within the stimulus improved performance significantly for some of the items, this was not the case for item 7. Probably future student improvement would not be gained by further refinement of the evaluation instrument but rather by refinement of the instructional procedure itself.

I'd like to summarize the points made in this section. On the basis of student performance data and from an examination of instructional units and evaluation documents themselves, it was decided to modify the evaluation instrument in an attempt to clarify the criterion situation. The revision did seem to produce improved student performance for some items but not for all. On the basis of data collected on students who had used the revised materials, it would be hypothesized that further refinement of the criterion items would not produce significant results but rather that improved results could only be improved by the refinement of the instructional procedure itself.

Example: Reorganization of a Module

Let's now consider an example of a data-based modification of an objective as well as a reorganization of instructional materials and the evaluation

items. This example is taken from a module in science designed for students who are in approximately their tenth year of school. Figure 8 shows the objectives from the original module and the revised module.

The original objective was, "Measure the volume of solids and liquids in metric units to within one millimeter." The learning activities asked the student to read about the measurement of solids and liquids. It also had the students do a number of practical exercises in which they used a graduated cylinder and beaker to actually measure different amounts of water. Because it was anticipated that students would have to do some conversions from one type of unit to another, there are also some activites requiring such conversions, for example, from centimeters to millimeters.

Figure 9 shows the summary across all items of student performance data for objective 6685 in the original module. Since the distribution of correct responses does not indicate a pattern of mastery and, furthermore, since only 12.6 percent of the students answered all four items correctly, it appears that students were having difficulty mastering the objective. An examination was made of the item responses for each of the four individual items. The summary by items is presented in Figure 10. As can be seen for items 12 and 13, thirty-three and thirty-six percent of the students respectively were selecting the correct item. An examination of both items 12 and 13 indicated that each was a conversion item rather than a direct measurement item, whereas items 14 and 15 dealt with actual measurement of volume. This lead to an examination of some other items for other objectives. It was then discovered that there were a number of items

throughout the test which, although related to different types of measurement, were primarily problems in conversion from one system of measurement to another. The decision was made to reorganize the module and to add an objective dealing specifically with conversion.

The new objective that was added on conversion was, "Define each of the prefixes used to indicate different units of measure in the metric system (Milli-, Centi-, Deci-, and Kilo-). Given a measure of length, volume, or weight in any metric unit, convert the measure to any other metric unit of length, volume, or weight." The learning activities of the module were then reorganized so that those dealing with the conversion were grouped under the new objective and those pertaining primarily to the measurement of volume were classfied under the appropriate objectives.

Figure 11 indicates the test results for the revised module. For objective 6685, the pattern is better in the revised module than in the original module; but, still, there is a relatively small percentage of students (27.9) who were getting all items correct. On the other hand, for objective 6702, the distribution of correct responses is fairly satisfactory.

Reviewing the pattern for objective 6685, it would again be useful to investigate the particular item responses to see if something can be learned from the data. A summary of the individual item responses for objective 6685 is given in Figure 12. It can be seen that item number 14

is causing a severe amount of difficulty, whereas items 15 and 16 are quite satisfactory. Figure 13 shows item 14. Although this item deals with measurement of volume, it could more correctly be described as a question involving conversion from cubic centimeters to liters. The other two items -- items 15 and 16 -- deal directly with measurement skills. On these items the students seem to be doing satisfactorily. We could, therefore, conclude that with respect to the objective 6685 itself. the students were performing satisfactorily; although it would be good to have more items to evaluate student performance. Item 14 is a misplaced item dealing with conversion.

It is interesting to note that item 14, on which the students were having severe difficulty, is the same as item 12 on the original test. Looking back at the previous test results in figure 10, it can be seen that item 12 was answered correctly by thirty-three percent of the students initially, whereas it was answered correctly by thirty-nine percent of the students in the revised module. This is an improvement, but not the type of improvement that would be desired.

Examining the item responses for item 14 in Figure 12 more closely, it can be seen that although incorrect options A, B, and C each received a large number of responses, item C was selected most often. Looking back at the item responses for item 12 (Figure 10) from the previous year's test, the same is true. Looking at option C, it is seen that the response is 500 cc's, whereas the correct response is 5,000 cc's. It would appear that the students are mistakenly assuming that a liter contains 100 cubic centimeters rather than 1,000. It can be assumed that

the students are not having difficulty with the conversion between milliliter and liter since this is the performance required in item number 11 where eighty-one percent of the students are attaining the correct response. The real difficulty, then, seems to be the conversion from cubic centimeters to milliliters. An examination of the teaching-learning unit indicates that there are numerous opportunities for the student to practice conversion within the same system -- that is, converting centimeters to milliliters, or converting milliliters to liters, but there is little emphasis given to converting cubic centimeters to milliliters. Thus, the data has indicated a potential source of difficulty, and this potential source of difficulty was, in fact, found in the materials themselves. Future revision should take this problem into account.

Summary

The improvement of the educational process is an ongoing activity. Attempts at improvement can be completely heuristic or can be based upon student performance data. The examples presented have shown the data upon which revisions of PLAN modules were made and have shown student performance results on the revised materials.

The data analysis process is not cut and dried, and yet there are some general rules which can be followed. By first examining summary results for all items for an objective, it is possible to determine whether or not the general level of performance is acceptable. A mastery type distribution is desirable. Although the initial examination is made on the summary of test items, it is possible to know a little about the individual items even

from this summary. If the summary is good, then no individual item can be too bad; but if the summary indicates difficulty, it is necessary to look at the individual items to see where the difficulty is.

After looking at the items summarized for the objective, it is desirable to examine individual test item response patterns. Clearly, a uniform distribution of wrong responses indicates general misconceptions, whereas a heavy loading on specific wrong responses signals errors in the instructional material or the test itself. Also, a particular alternative may clue a wrong response.

Overall, the improvement of instructional units using student performance data is in the "pre-scientific" stage. Through continual work in this area, we hope not only to be able to improve student performance on specific objectives but also to discover generalizable paradigms for general improvement.

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Figure 1

SAMPLE TEACHING-LEARNING UNITS

10-251-4 DICTIONARY SKILLS AND SIMPLE SENTENCES (0,00)

Step 2. (3353) Objective: GIVEN A GROUP OF SENTENCES IN WHICH THE SAME UNDERLINED WORD IS USED WITH A DIFFERENT MEANING IN EACH SENTENCE, WRITE THE DEFINITION OF THE WORD AS IT IS USED IN EACH SENTENCE.

USE	DO
"What's the Word?" Part II -- Suffixes, from *Reading for Meaning*, Houghton Mifflin Company, 1966, filmstrip. Filmstrip viewer. *Open Highways*, Book 5, "Think-and-Do Book." *Open Highways*, Book 5, "Think-and-Do Book," Teacher's Edition.	(a) View the filmstrip. (b) List suffixes or word endings used in the filmstrip. Example: (1) *-ness* (6) (2) (7) (3) (8) (4) (9) (5) (10) (c) Do the exercise on p. 38. Write just the answers. Check your work in The Teacher's Edition.

13-315-3 *WHEN* AND *HOW* TRANSFORMS, WORD CLASSES, COMPOSITION (0,00)

Step 4. (3912) Objective: AFTER READING A SELECTION OF LITERATURE, WRITE AN ORIGINAL COMPOSITION ABOUT THE PERIOD OF TIME COVERED IN THE SELECTION.

USE	DO
The Roberts English Series, Book 6. *Spoken English to Accompany the Roberts English Series*, Grade 6, Harcourt, Brace & World, Inc., record set.	(a) An author, whose works you will read as you continue through school, is William Shakespeare, who wrote in England about 1600. Many people consider him the world's greatest poet. On p. 107, there is a little song about winter from one of the plays he wrote. As you listen to a recording of this poem on Record 6A, Side One, you should remember that at the time it was written, winter was a very difficult time for both the [illegible]

Figure 2

ORIGINAL TEST QUESTIONS

Three of the students in Mrs. Bryon's class were doing some experiments. Experiment I is described in the paragraph below. Read this paragraph carefully before you answer questions 7 through 11.

EXPERIMENT I

Each of the three students was given a different list of three-digit numbers and allowed one hour in which to memorize his list. The students practiced in a quiet area, and when they were finished, took Test I to find out how many numbers they had memorized. They all took Test I at the same time, in the same room. Six weeks later, they took Test II to see how many of the numbers they had remembered. Each student took Test II in a different room. None of the students had been allowed to practice between Test I and Test II.

Now, answer questions 7 through 11 by using information given in the description of Experiment I, above.

7. The list of numbers memorized by the students was

   A. a controlled variable.
   B. an uncontrolled variable.

8. The amount of practice time allowed for the students to memorize the list was

   A. a controlled variable.
   B. an uncontrolled variable.

9. The time of day when the students took Test I was

   A. a controlled variable.
   B. an uncontrolled variable.

10. The time between Test I and Test II was

    A. a controlled variable.
    B. an uncontrolled variable.

11. The noise in the room where the students took Test II was

    A. a controlled variable.
    B. an uncontrolled variable.

Figure 3

SUMMARY ACROSS ALL ITEMS OF STUDENT PERFORMANCE DATA

FOR ORIGINAL TEST QUESTIONS

Objective 3102

Number of Items Correct	Frequency	Percent
0	6	11.1
1	5	9.3
2	8	14.8
3	20	37.0
4	11	20.4
5	4	7.4
TOTAL	54	100.0
MEAN		2.69
STANDARD DEVIATION		1.39

Figure 4

SUMMARY BY ITEM OF PERCENT OF STUDENTS RESPONDING CORRECTLY TO ORIGINAL TEST QUESTIONS

Objective 3102

Item Number	Percent of Students Responding Correctly
7	34
8	91
9	50
10	79
11	51

Figure 5

REVISED TEST QUESTIONS

30-264 MODULE TEST Page 2

Three of the students in Mrs. Bryon's class were doing two experiments. The first experiment is described in the paragraph below. Read this paragraph carefully before you answer questions 7 through 10.

EXPERIMENT I

Each of the three students was given a different list of numbers and allowed one hour in which to memorize his list. The students practiced in a quiet area and, when they were finished, took Test I to find out how many numbers they had memorized. They all took Test I at the same time of day, in the same room. Six weeks later, they took Test II to see how many of the numbers they had remembered. The students took Test II at the same time but in different rooms. None of the students had been allowed to practice between Test I and Test II.

Now, answer questions 7 through 10 by using information given in the description of Experiment I above.

7. The list of numbers memorized by the students was

   A. a controlled variable.
   B. an uncontrolled variable.

8. The amount of practice time allowed for the students to memorize the list was

   A. a controlled variable.
   B. an uncontrolled variable.

9. The time of day when the students took Test I was

   A. a controlled variable.
   B. an uncontrolled variable.

10. The time between Test I and Test II was

   A. a controlled variable.
   B. an uncontrolled variable.

Figure 6

SUMMARY ACROSS ALL ITEMS OF STUDENT PERFORMANCE DATA

FOR REVISED TEST QUESTIONS

Objective 3102

Number of Items Correct	Frequency	Percent
0	3	2.0
1	12	8.0
2	20	13.3
3	61	40.7
4	54	36.0
TOTAL	150	100.0
MEAN		3.01
STANDARD DEVIATION		.99

Figure 7

SUMMARY BY ITEM OF PERCENT OF STUDENTS RESPONDING CORRECTLY TO REVISED TEST QUESTIONS

Objective 3102

Item Number	Percent of Students Responding Correctly
7	48
8	89
9	95
10	80

Figure 8

OBJECTIVES FROM ORIGINAL SCIENCE MODULE AND REVISED SCIENCE MODULE

Objective from Original Module

6685 Measure the volume of solids and liquids in metric units to within one milliliter.

Objective from Revised Module

6685 Measure the volume of solids and liquids in metric units to within one milliliter.

6702 Define each of the prefixes used to indicate different units of measure in the metric system (Milli, Centi, Deci, and Kilo). Given a measure of length, volume, or weight in any metric unit, convert the measure to any other metric unit of length, volume, or weight.

Figure 9

SUMMARY ACROSS ALL ITEMS OF STUDENT PERFORMANCE DATA

FOR ORIGINAL MODULE

Objective 6685

Number of Items Correct	Frequency	Percent
0	27	4.5
1	139	23.1
2	225	37.4
3	135	22.4
4	76	12.6
TOTAL	602	100.0
MEAN		2.16
STANDARD DEVIATION		1.06

Figure 10

SUMMARY BY ITEM OF NUMBER OF STUDENTS RESPONDING CORRECTLY TO ORIGINAL TEST QUESTIONS

Objective 6685

Item Number	Options						Percent of Students Responding Correctly
	A	B	C	D	E	Omit	
12	84	107	187	196*	28	0	33
13	70	47	219*	161	103	2	36
14	396*	17	106	83	0	0	66
15	38	31	487*	45	1	0	81

*Correct response

Figure 11

SUMMARY ACROSS ALL ITEMS OF STUDENT PERFORMANCE DATA FOR REVISED MODULE

Objective 6685

Number of Items Correct	Frequency	Percent
0	33	8.4
1	84	21.3
2	167	42.4
3	110	27.9
TOTAL	394	100.0
MEAN		1.90
STANDARD DEVIATION		.91

Objective 6702

Number of Items Correct	Frequency	Percent
0	21	5.3
1	47	11.9
2	61	15.5
3	103	26.1
4	162	41.2
TOTAL	394	100.0
MEAN		2.86
STANDARD DEVIATION		1.21

Figure 12

SUMMARY BY ITEM OF RESPONSES OF STUDENTS RESPONDING CORRECTLY TO REVISED TEST QUESTIONS

Objective 6685

Item Number	Options						Percent of Students Responding Correctly
	A	B	C	D	E	Omit	
14	64	55	101	154*	17	3	39
15	285*	24	33	52			72
16	28	30	309*	25	1	1	78

Objective 6702

Item Number	Options						Percent of Students Responding Correctly
	A	B	C	D	E	Omit	
10	19	258*	27	18	71	1	65
11	26	23	318*	9	18		81
12	9	27	22	307*	29		78
13	64	72	243*	13		2	62

*Correct response

Figure 13

Item 14 -- Revised Test

14. How many cubic centimeters (cc) of water could be contained in a 5 liter container?

A. 5 cc
B. 50 cc
C. 500 cc
D. 5,000 cc
E. 0.5 cc

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The Development of Procedures for the Individualization of Educational Programs

James A. Dunn

American Institutes for Research

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The Development of Procedures for the Individualization of Educational Programs

Project PLAN is an attempt to develop an educational system which will more fully meet the needs of today's youth. More specifically, PLAN is an ungraded, computer supported, individualized program of education. PLAN is learner oriented. Content, rate, and instructional materials are tailored to the individual student. Performance requirements are criterion referenced and success focused. Tests and materials were developed to an 80-80 target, i.e., 80% content mastery by 80% of the students, on first completion of the material. The acronym, PLAN, stands for Program for Learning in Accordance with Needs. As the name of the project implies, the student's program of studies is the heart of the system. The purpose of this paper is to review the development of the PLAN procedures for individualizing these programs.

During the first year of PLAN operation in the schools, because of the modest scope of instructional materials available (PLAN had been in operation as a project only six months when school opened and only grades 1, 5 and 9 were involved at that time), student planning was perforce quite simple. The POS was, in essence, linear. That is, once a student was placed in a particular reading program or course, all students in that course, assuming no teacher intervention, were generally required to take the same instructional materials in the same order. It was the teachers' responsibility to ensure a satisfactory rate of student progress through the materials. The only POS related service offered through the computer at that time was test scoring and, upon satisfactory student completion of a lesson, the assignment of the next lesson in the sequence.

During the second year of PLAN somewhat more flexibility in curricular assignment and somewhat better control over content pacing was achieved. During this period the student and his teacher jointly planned what lessons the student would take, the order in which they would be taken, and the number to be taken. Teacher-pupil planning of this type took place as soon as possible after school started and was repeated quarterly throughout the school year. Of course, whenever a pupil, or his teacher, thought he was

falling behind in his commitment, they could, and frequently did, enter into renewed planning to arrive at revised agreements that were more realistic and thus, more psychologically binding. A sample of the form used by the teacher and the pupil in their planning is given in Figure 1.

This procedure was considerably more effective in individualizing students' studies than the earlier linear procedure, but it was far from what was originally envisioned for PLAN. It is clearly unrealistic to expect the teacher at the beginning of the year to be intimately knowledgeable about all of the children in her class, their interests and abilities, their general approaches to learning, their long range goals and aspirations, and the like.

During the third year of operation we were ready for transition to a more comprehensive system. We had nine levels of instructional materials to draw from, we had fairly extensive testing procedures to use, and we had histories on prior PLAN performance for two-thirds of our students. At this point we were ready to begin testing procedures wherein the power of the computer might be used to generate tentative, or recommended, student programs of study. The general rationale and characteristics of this procedure were reported in some detail at APA last year.[1] Samples of these early data suggested POS's are given in Figure 2.

This year, for the first time, all 12 grade levels will be represented in PLAN. To operate an individualized system such as PLAN, one must have a relatively large number of lessons which are discretely, and behaviorally, defined. And each of these must have their own assessment procedures. In PLAN we have approximately 2,500 teaching-learning units representing 1200 instructional units or modules. Each module has its own criterion test which is taken immediately upon completion of the module and which must be mastered before the student proceeds to the next module.

One also needs considerable information about students, their interests, abilities, achievements, and aspirations. This Spring a two-day battery of tests was administered to every student. This testing included PLAN

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[1] James A. Dunn, The Accommodation of Individual Differences in the Development of Personal Programs of Study. Presented at the 1969 APA Convention.

Achievement Tests for each of the subject matter areas studied by the student and a Developed Abilities Performance test (patterned after the Project TALENT tests which measured such developed abilities as vocabulary, reading comprehension, arithmetical reasoning, and the like). Information on student interests was also collected at that time. In addition we also have the student's previous academic history, which has been accumulated via module tests throughout the student's tenure in PLAN.

Finally, one needs a set of decision rules, i.e. specifications and guidelines, by which the information about students and materials can be interconnected to produce meaningful programs of study. This year's specifications for POS consist of over 200 pages of detailed instructions, charts, and diagrams; plus an additional 400 pages of detailed tables and module coding information describing the characteristics of the 1200 modules in the PLAN repertoire.

Currently, a PLAN student's program of studies (POS) is developed in the following manner. First, state and local school system requirements are considered and a check of the student's academic history is made to see if he has met those requirements. Then his history is reviewed to ascertain that he has completed the essential elements of the previous year's work; that is, a check is made to see if he has the necessary academic foundations to pursue the work that will be expected of him in the coming year. Next, the child's achievement test results are considered to see if there is anything from last year's material that needs to be reviewed and what, if anything, from the coming year's work he may already know. These procedures define what might be described as the core content of the student's future POS.

These core requirements are then projected across the time remaining for the student to study that particular area. In the early primary grades, for example, reading programs generally are of three years' duration. Thus, an entering second grader should normally work to finish his basic reading instruction in the next two years. It is not essential that he do so; it is simply a more or less reasonable target. A high school student entering as a sophomore would have three years to continue his mathematics studies; unless of course, he indicated he planned to take mathematics a fewer

number of years.

After the basic, or core requirements are identified and distributed across the balance of the time expected to be devoted to the study of that content, attention is then turned to determining how much of the requisite material should be taken in the immediately ensuing year. If n is the number of years remaining to study in an area, then the student is assigned at least 1/n of the required modules. Typically the core requirements constitute much less than a year's worth of study, so attention must shift to the assignment of modules to augment these basic core modules. To do this, consideration must be given to determining what is a reasonable amount of work for the student to cover in a year.

This is determined by taking into consideration both the student's level of developed abilities, as determined by a battery of tests administered in the Spring, and also the number of modules the student completed the preceding year.

In the event that a student's quota is not filled by the 1/n requirement (an almost guaranteed condition), the POS then begins to assign lessons that are considered highly desirable for the student to take. These are lessons not considered to be absolutely essential for further academic progress but which are nevertheless considered to be very important, basic, content for the student to learn.

If upon completion of assignment of these highly desirable lessons the student's quota for the year is still not filled, the remainder of the quota is divided evenly between lessons expected to appeal to the special interests of the student and to the assignment of required modules. from the next higher level. Assignment of modules of this latter type permits some measure of student acceleration without sacrificing curriculum enrichment.

After these lessons, or modules, have been selected, attention is then directed toward making recommendations as to which particular instructional materials (Teaching-Learning Units) the student should use in the study of his lessons. The primary factors considered in these recommendations are reading difficulty level and amount of social involvement required.

Samples of this year's elementary school POS's may be found in Figures 3 through 8.

In the case of secondary school students, the process is somewhat more complicated due to the fact that the student's long range educational and vocational goals must also be considered. Twelve long range goal clusters, or families, which have been identified empirically from Project TALENT data are being used in PLAN. An attempt is made to keep student-parent planning focused on these general goal clusters rather than on specific occupations. This allows us to keep as flexible as possible in planning for students.

From what is known from TALENT, and other sources, about job mobility and the generally poor quality of current student vocational and educational planning, PLAN has adopted the philosophy that as many reasonable options as possible should be kept open to the student for as long as possible.

The POS is developed to consider not only the long range goal expressed by the student and/or his parents, but also a second "goal" which is the result of the best professional judgment that can be made, given the data available for the student. Thus, at the secondary level, the student's program of studies aims at providing the student with preparation for at least two major long range goal areas. This is felt to be a very important characteristic of the secondary level program of studies. Its importance is reflected in data obtained in PLAN last year.

Nearly 2000 PLAN students, and their parents were asked to carefully consider their long range educational and vocational plans in order that we might accommodate them in their suggested programs of study. 82% indicated vocational goals that required a college education, but only 28% indicated that they had plans to, or expected to, attend college. (See Table 1.) Had educational planning been carried out, as is usually the case, on the expressed college-non college expectation of the student (and presumably his parents), a large number of families and students would no doubt have been very disappointed at some future point in time.

Similarly, when the expressed vocational goals of students were compared to the vocational categories for which they had the ability, it

became quite apparent that large numbers of parents and students were selecting long range vocational goals well below their ability levels. (See Tables 1 and 2.)

This year PLAN includes a rather extensive set of guidance materials aimed at helping students and their parents become much more realistic in long range goal formulation and planning.

In summary then, the major components new this year are: 1) greater flexibility in the sequencing of modules; 2) procedures for reviewing "essential" academic content that the student had once mastered but had apparently forgotten; 3) procedures whereby students might obtain "credit" for content which test scores indicated they already knew but which they had not formally studied in PLAN; and 4) procedures whereby students and parents engage in a series of relatively intensive exercises aimed at helping them arrive at relatively realistic long range educational and vocational goals. This latter set of procedures provided for students to become much more knowledgeable about the world of work, the world of higher education, about their own interests and developed abilities, and lastly about the skills and abilities required of various types of long range goals.

As one would expect, PLAN POS's will vary considerably in type and amount of content covered, and in the rate and sequence in which that content is covered.

With this approach the concept of a curriculum tends to become meaningless. Obviously, from an operational point of view, there are as many different curricula as there are discrete programs of study. The unit of instruction becomes the individual rather than the class, and the unit of credit may be defined in terms of content mastery rather than content exposure (e.g., the Carnegie Unit or the semester hour).

Finally, with regard to some simple operating characteristics, student programs of study are run on an IBM Model 50 computer. Over 140,000 units of core storage are required just to store curriculum information about the 1200 instructional modules in the PLAN system. The remaining 8,000 units

of storage are required for processing. The processing time for each elementary student's POS (one in each of four subject matter areas: math, science, language arts, and social studies) is approximately 10 seconds. While this seems like a very brief time, and indeed is very economical, 10 seconds of continuous computer processing on a machine such as the 360-50 represents an extremely large number of decisions for each student.

In conclusion it should be indicated that, regardless of the nature and degree of planning that has gone on, the teacher is the final authority in the classroom. The teacher uses the recommended POS as he or she sees fit. She may implement the program of study in its entirety; she may make minor revisions to it; she may make major revisions to it; or she may even ignore it completely and develop an alternative program of studies for the student. Whatever her final course of action, she at least will have had the best counsel we could offer.

TABLE 1

Student-Parent Educational Goal	Student-Parent Long Range Goal Category: College	Non-College	Total
College	538 28%	121 6%	659 34%
Non-College	1035 54%	221 12%	1256 66%
Total	1573 82%	342 18%	1915

χ^2 = 12 with 1 d.f.

TABLE 2

Data Suggested LRG Category	Student-Parent Long Range Goal Category: College	Non-College	Total
College	681 50%	22 16%	903 66%
Non-College	278 20%	184 13%	462 33%
Total	959 70%	406 29%	1365

χ^2 = 33.25 with 1 d.f. $p < .001$

FIGURE 1

Student Name John Doe Subject Area World History Contract Date September 9, 1968

To the Student

This contract is a tentative agreement between you and one of your PLAN teachers. Its purpose is to help you, your parents, your teacher, and your counselor agree upon plans and decisions made for your future work in one PLAN class. If you complete this contract and have helped plan it, you will have demonstrated at least minimum mastery of this subject if you do the following:

1. Complete the modules listed in your Program of Studies during the time period planned;
2. Meet the check-points listed in your Individualized Schedule in order to complete your Program of Studies successfully.
3. Meet any additional performance requirements listed on the back of this page; and
4. Score at satisfactory levels on any Survey Tests you take during the time period planned.

The information on the back of this page should tell what decisions you have made about the goals you want to achieve soon in Project PLAN. These goals will help you manage your learning activities in this class. Therefore, make sure that you give as complete information as you can. Complete information is also needed for computer processing. When you and your teacher have completed your contract, get the necessary signatures below. Decide with your teacher whether or not your parents' signature is necessary.

Make sure that you have one copy of a signed contract for each of your PLAN classes. Your teachers might want to keep a copy of every contract.

By November 15, 1968, I plan to have 5 modules completed in this subject area. The number will equal about one-quarter of my year's work.

I agree that this is a tentative contract. My teacher and I may have to revise it if my work during the next few weeks shows that my Program of Studies, Individualized Schedule, or other requirements are impossible to achieve. If I find that I am making much more progress than we expected, I shall tell my teacher so that we can decide upon more challenging goals and plan a more reasonable schedule.

John Doe
(your signature)

Mrs. S. Jones
(Teacher's signature)

Mrs. Michael Doe
(Parent's signature) (Optional)

(Other required signatures)

I understand that in order to demonstrate minimum mastery of this subject I will need to do the following:

1. complete the modules below with either a "Complete," a "Student Review," or a "Teacher Certify" result by this date: November 15, 1968
(Contract completion date)

PROGRAM OF STUDIES

Fill in the numbers of the modules you plan to complete.

Module number	Module number	Module number
1. 43-641	3. 43-643	5. 43-649
2. 43-642	4. 43-644	6.

2. meet this INDIVIDUALIZED SCHEDULE of checkpoints of my progress. If you chose to have checkpoints after completing each module, or after a group of modules, or after each step, etc., write this specific information below. If you have selected checkpoint dates, write these here also. Make sure you describe completely the kind of schedule you and your teacher chose.
Schedule of checkpoints: Checkpoints after each module on the following dates 9/20/68, 10/4/68, 10/18/68, 11/1/68, and 11/15/68
Person(s) with whom I shall check: Teacher

3. meet these other requirements: no other requirements

4. score at satisfactory levels on any Survey Tests I take in this subject during this time period.

FIGURE 2

PLAN

PROGRAM OF STUDIES AND STUDENT PROGRESS REPORT FOR GILES JOHN

860148-02-0 SCHOOL ADDISON TEACHER MRS. ETHEL BARKER SUBJECT AREA LANGUAGE ARTS DATE 11/16/69

COMPLETION CODE	MODULE NUMBER	MODULE NAME	DATE FINISHED
	10-101-0	ABOUT MYSELF	
	12-060-0	SULLIVAN BOOK 12 (B)	
	12-061-3	SULLIVAN BOOK 13 (A)	
	12-062-3	SULLIVAN BOOK 13 (B)	
	12-063-3	SULLIVAN BOOK 14 (A)	
	12-064-3	SULLIVAN BOOK 14 (B)	
	10-107-3	DRAMATICS	
	10-108-3	WINDY, RAINY, AND SUNNY DAYS	
	10-109-3	STORY WRITING	
	10-110-3	A VISIT ON PAPER	
	10-111-3	BEARS ON HEMLOCK MOUNTAIN	
	10-112-3	ANIMAL STORIES	
	10-113-3	AND TO THINK THAT I SAW IT ON MULBERRY STREET	
	10-114-3	THANK YOU, MR. BELL	
	11-151-3	PEGASUS	
	13-161-3	SUBJECT, PREDICATES, AND NOUNS	
	11-152-3	THUNDER	
	11-153-3	THE KNIGHT	
	11-154-3	THE SAD TIGER	
	13-162-3	*PROPER NOUNS, COMMON NOUNS, AND DETERMINERS	
	11-155-3	SUSY'S FEARS	
	11-156-3	SMILES FARM	
	11-157-3	THE ROUNDABOUTS SECRET	
	13-163-3	PRONOUNS AND SUBJECTS	
	11-158-3	BUGABOO	

PLAN

PROGRAM OF STUDIES AND STUDENT PROGRESS REPORT FOR MOORE THOMAS

860013-02-0 SCHOOL ADDISON TEACHER MRS. ETHEL BARKER SUBJECT AREA MATHEMATICS DATE 11/16/69

COMPLETION CODE	MODULE NUMBER	MODULE NAME	DATE FINISHED
	82-052-0	MATHEMATICS ACHIEVEMENT TEST	
	82-051-0	MATHEMATICS ACHIEVEMENT TEST	
	20-101-0	SETS	
	20-102-0	COMBINATIONS THROUGH 10	
	20-103-3	ADDITION COMBINATIONS THROUGH EIGHTEEN	
	20-104-3	COMBINATIONS THROUGH EIGHTEEN	
	20-105-3	ADDITION AND SUBTRACTION	
	20-106-3	PLACE VALUE	
	20-107-3	ADDITION REGROUPING	
	20-108-3	SUBTRACTION REGROUPING	
	20-110-3	MULTIPLICATION	
	20-109-3	ODD AND EVEN	
	20-112-3	FRACTIONS	
	20-113-3	LINEAR MEASURE	

FIGURE 3

PLAN

PROGRAM OF STUDIES 1824 GONZALEZ MARIA

009 IMMACULATE HEART LEVEL 2 LANGUAGE ARTS FALL 1970

COMPLETION CODE	MODULE NUMBER	MODULE NAME	NO OF TIMES TESTED	DATE STARTED
		YOUR TEST RESULTS SHOW THAT YOU SHOULD REVIEW THE OBJECTIVES OF THESE MODULES WHICH YOU COMPLETED LAST YEAR. DO NOT SUBMIT PAGE OR TEST CARDS FOR THEM.		
	10-050-3	ALPHABET 1		
	10-051-3	ALPHABET 2		
	11-056-3	SULLIVAN BOOK 3(A)		
	11-057-3	SULLIVAN BOOK 3(B)		
	11-059-3	SULLIVAN BOOK 4(B)		
	11-060-3	SULLIVAN BOOK 5(A)		
	11-061-3	SULLIVAN BOOK 5(B)		
	11-062-3	SULLIVAN BOOK 6(A)		
	11-063-3	SULLIVAN BOOK 6(B)		
	11-064-3	SULLIVAN BOOK 7(A)		
		THE FOLLOWING MODULES ARE SUGGESTED FOR YOUR PROGRAM OF STUDIES FOR THIS YEAR.		
	10-052-3	FOLK TALES		
	10-053-3	ANIMAL STORIES		
	10-054-3	FUN WITH LANGUAGE		
	11-058-3	SULLIVAN BOOK 4(A)		
	10-055-3	TOPSY-TURVY ANIMALS		
	11-065-3	SULLIVAN BOOK 7(B)		
	10-101-3	ABOUT MYSELF		
	12-051-3	SULLIVAN BOOK 8(A)		
	12-052-3	SULLIVAN BOOK 8(B)		
	10-102-3	MY FRIENDS		
	12-053-3	SULLIVAN BOOK 9(A)		
	10-103-3	PICTURES WITH WORDS		
	12-054-3	SULLIVAN BOOK 9(B)		
	81-100	PLAN ACHIEVEMENT TEST		
	10-104-3	JINGLES AND RHYMES		
	12-055-3	SULLIVAN BOOK 10(A)		

COMPLETION CODE	MODULE NUMBER	MODULE NAME	NO OF TIMES TESTED	DATE STARTED	DATE FINISHED
	10-105-3	THE 500 HATS OF BARTHOLOMEW CUBBINS			
	12-056-3	SULLIVAN BOOK 10(B)			
	10-106-3	STORY TELLING			
	81-104	PLAN ACHIEVEMENT TEST			
	12-057-3	SULLIVAN BOOK 11(A)			
	10-107-3	DRAMATICS			
	12-058-3	SULLIVAN BOOK 11(B)			
	81-101	PLAN ACHIEVEMENT TEST			
	12-059-3	SULLIVAN BOOK 12(A)			
	12-060-3	SULLIVAN BOOK 12(B)			
	10-110-3	A VISIT ON PAPER			
	12-061-3	SULLIVAN BOOK 13(A)			
	12-062-3	SULLIVAN BOOK 13(B)			
	12-063-3	SULLIVAN BOOK 14(A)			
	12-064-3	SULLIVAN BOOK 14(B)			
	81-102	PLAN ACHIEVEMENT TEST			
	10-114-3	THANK YOU, MR. BELL			

FIGURE 4

PLAN

PROGRAM OF STUDIES 1824 GONZALES MARIA

003 IMMACULATE HEART LEVEL 2 MATHEMATICS FALL 1970

COMPLETION CODE	MODULE NUMBER	MODULE NAME	NO OF TIMES TESTED	DATE STARTED	DATE FINISHED
		YOUR TEST RESULTS SUGGEST THAT YOU KNOW SOME OF THE OBJECTIVES OF THESE MODULES IN YOUR PROGRAM OF STUDIES. AFTER REVIEWING EACH MODULE CAREFULLY, CONSIDER CHALLENGING IT.			
	20-059-3	INTRODUCTION TO SUBTRACTION			
	20-060-3	SUBTRACTION OF 1-DIGIT NUMBERS FROM 1-DIGIT NUMBERS			
	20-061-3	INTRODUCTION TO NUMBER SENTENCES			
	20-102-3	COMBINATIONS THROUGH 10			
	20-103-3	ADDITION COMBINATIONS THROUGH 18			
	20-104-3	SUBTRACTION COMBINATIONS THROUGH 18			
	20-105-3	ADDITION AND SUBTRACTION OF TWO-DIGIT NUMBERS			
		THE FOLLOWING MODULES ARE SUGGESTED FOR YOUR PROGRAM OF STUDIES FOR THIS YEAR.			
	20-059-3	INTRODUCTION TO SUBTRACTION			
	20-060-3	SUBTRACTION OF 1-DIGIT NUMBERS FROM 1-DIGIT NUMBERS			
	20-061-3	INTRODUCTION TO NUMBER SENTENCES			
	20-101-3	MATHEMATICAL SENTENCES			
	20-102-3	COMBINATIONS THROUGH 10			
	20-103-3	ADDITION COMBINATIONS THROUGH 18			
	20-111-3	MONEY 2			
	20-104-3	SUBTRACTION COMBINATIONS THROUGH 18			
	82-100	PLAN ACHIEVEMENT TEST			
	20-105-3	ADDITION AND SUBTRACTION OF TWO-DIGIT NUMBERS			
	20-113-3	LINEAR MEASURE 2			
	20-106-3	PLACE VALUE TO THREE DIGITS			
	20-107-3	ADDITION WITH REGROUPING			
	20-108-3	SUBTRACTION WITH REGROUPING			
	20-114-3	TIME 2			
	82-101	PLAN ACHIEVEMENT TEST			
	20-110-3	INTRODUCTION TO MULTIPLICATION			
	20-112-3	INTRODUCTION TO FRACTIONS			

COMPLETION CODE	MODULE NUMBER	MODULE NAME	NO OF TIMES TESTED	DATE STARTED	DATE FINISHED
	82-102	PLAN ACHIEVEMENT TEST			
	20-109-3	ODD AND EVEN			
SET	27-022	TAKE ANY 1 OF THE FOLLOWING 2 MODULES. WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 27-022.			
	20-115-2	ADDITION WITH THREE ADDENDS			
	20-116-3	ADD AND SUBTRACT 4-DIGIT NUMBERS WITHOUT REGROUPING			
	20-152-3	BASIC ADDITION AND SUBTRACTION			
	20-153-3	PLACE VALUE TO FOUR DIGITS AND EXPANDED NOTATION			

FIGURE 5

PLAN

PROGRAM OF STUDIES 1824 GONZALES MARIA

005 IMMACULATE HEART LEVEL 2 SOCIAL STUDIES FALL 1970

COMPLETION CODE	MODULE NUMBER	MODULE NAME	NO OF TIMES TESTED	DATE STARTED	DATE FINISHED
		YOUR TEST RESULTS SUGGEST THAT YOU KNOW SOME OF THE OBJECTIVES OF THESE MODULES IN YOUR PROGRAM OF STUDIES. AFTER REVIEWING EACH MODULE CAREFULLY, CONSIDER CHALLENGING IT.			
	40-120-3	CONSTRUCTING BUILDINGS			
	40-116-3	WHERE WE GET OUR FOOD			
	40-117-3	HOW WE USE OUR FOOD			
	40-118-3	WHERE WE GET OUR CLOTH			
		THE FOLLOWING MODULES ARE SUGGESTED FOR YOUR PROGRAM OF STUDIES FOR THIS YEAR.			
SET	47-008	NEIGHBORHOOD BUILDINGS TAKE ANY 1 OF THE FOLLOWING 2 MODULES. WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 47-008.			
	40-120-3	CONSTRUCTING BUILDINGS			
	40-121-3	FACTORIES IN THE NEIGHBORHOOD			
SET	47-003	NEIGHBORHOOD TYPES TAKE ANY 2 OF THE FOLLOWING 4 MODULES. WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 47-003.			
	40-102-3	SMALL-TOWN NEIGHBORHOODS			
	40-103-3	BIG-CITY NEIGHBORHOODS			
	40-104-3	SUBURBAN NEIGHBORHOODS			
	40-105-3	FARM NEIGHBORHOODS			

COMPLETION CODE	MODULE NUMBER	MODULE NAME	NO OF TIMES TESTED	DATE STARTED	DATE FINISHED
SET	47-004	NEIGHBORHOOD INSTITUTIONS TAKE ANY 2 OF THE FOLLOWING 3 MODULES. WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 47-004.			
	40-107-3	STORES IN THE NEIGHBORHOOD			
	40-108-3	GOVERNMENT IN THE NEIGHBORHOOD			
	40-110-3	SCHOOLS IN THE NEIGHBORHOOD			
	84-100	PLAN ACHIEVEMENT TEST			
SET	47-005	COMMUNICATION TAKE ANY 2 OF THE FOLLOWING 3 MODULES. WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 47-005.			
	40-111-3	COMMUNICATION			
	40-112-3	MASS MEDIA			
	40-113-3	TV PROGRAM			
SET	47-006	BASIC NEEDS TAKE ALL 3 OF THE FOLLOWING 3 MODULES. WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 47-006.			
	40-116-3	WHERE WE GET OUR FOOD			
	40-117-3	HOW WE USE OUR FOOD			
	40-118-3	WHERE WE GET OUR CLOTH			
	84-101	PLAN ACHIEVEMENT TEST			
	40-125-3	GETTING THERE FROM HERE			

COMPLETION CODE	MODULE NUMBER	MODULE NAME	NO OF TIMES TESTED	DATE STARTED	DATE FINISHED
SET	47-007	NEIGHBORHOOD CHARACTERISTICS TAKE ANY 1 OF THE FOLLOWING 3 MODULES. WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 47-007.			
	40-109-3	HOW NEIGHBORHOODS CHANGE			
	40-119-3	PEOPLE IN THE NEIGHBORHOOD			
	40-124-3	HOW NEIGHBORHOODS SOLVE PROBLEMS			
	40-151-3	WHAT IS A COMMUNITY?			
	40-152-3	MY OWN COMMUNITY AND ITS RESOURCES			
	40-153-3	A LOOK AT OTHER COMMUNITIES			
	40-177-3	MAP STUDY--REGIONS OF THE WORLD			
	40-178-3	MAP STUDY--LAND AND WATER			

FIGURE 6

PLAN

PROGRAM OF STUDIES 0917 LADUCA GINA

003 IMMACULATE HEART LEVEL 4 MATHEMATICS FALL 1970

COMPLETION CODE	MODULE NUMBER	MODULE NAME	NO OF TIMES TESTED	DATE STARTED	DATE FINISHED
		YOUR TEST RESULTS SHOW THAT YOU SHOULD REVIEW THE OBJECTIVES OF THESE MODULES WHICH YOU COMPLETED LAST YEAR. DO NOT SUBMIT STATUS OR TEST CARDS FOR THEM.			
	20-183-3	PLACE VALUE TO FOUR DIGITS AND EXPANDED NOTATION			
		YOUR TEST RESULTS SUGGEST THAT YOU KNOW SOME OF THE OBJECTIVES OF THESE MODULES IN YOUR PROGRAM OF STUDIES. AFTER REVIEWING EACH MODULE CAREFULLY, CONSIDER CHALLENGING IT.			
	20-172-3	SUBTRACTION OF THREE-DIGIT NUMBERS			
	20-197-3	MULTIPLICATION WITH REGROUPING			
		THE FOLLOWING MODULES ARE SUGGESTED FOR YOUR PROGRAM OF STUDIES FOR THIS YEAR.			
	20-172-3	SUBTRACTION OF THREE-DIGIT NUMBERS			
	20-197-3	MULTIPLICATION WITH REGROUPING			
	20-199-3	INTRODUCTION TO DIVISION			
	20-200-3	DIVISION PROCESS			
	20-211-3	POINTS, LINES, AND ANGLES			
	20-212-3	PROPERTIES OF POLYGONS			
	20-213-3	CIRCLES			
	82-202	PLAN ACHIEVEMENT TEST			
	20-192-3	PLACE VALUE TO SEVEN DIGITS			
	20-202-3	PROPERTIES OF WHOLE NUMBERS--MULTIPLICATION			
	20-203-3	MULTIPLICATION ALGORITHM			
	20-204-3	DIVISION ALGORITHM			
	82-200	PLAN ACHIEVEMENT TEST			
	20-206-3	THE FRACTION SYMBOL			
	20-207-3	FRACTIONS ON A LINE SEGMENT			
	20-208-3	FRACTIONS ON THE NUMBER LINE			
	20-209-3	EQUIVALENT FRACTIONS			

COMPLETION CODE	MODULE NUMBER	MODULE NAME	NO OF TIMES TESTED	DATE STARTED	DATE FINISHED
	20-210-3	IMPROPER FRACTIONS			
	82-201	PLAN ACHIEVEMENT TEST			
	20-167-3	MEASUREMENT OF LENGTH AND MAP SCALES			
	20-169-3	TIME 3			
	20-193-3	ADDITION AND SUBTRACTION OF FOUR-DIGIT NUMBERS			

FIGURE 7

PLAN

PROGRAM OF STUDIES 0917 LADUCA GINA

005 IMMACULATE HEART LEVEL 4 SOCIAL STUDIES FALL 1970

COMPLETION CODE	MODULE NUMBER	MODULE NAME	NO OF TIMES TESTED	DATE STARTED	DATE FINISHED
		THE FOLLOWING MODULES ARE SUGGESTED FOR YOUR PROGRAM OF STUDIES FOR THIS YEAR.			
	40-177-3	MAP STUDY--REGIONS OF THE WORLD			
	40-178-3	MAP STUDY--LAND AND WATER			
GROUP	COMMUNITY TYPES	TAKE ANY 2 OF THE FOLLOWING 4 SETS.			
SET 1 47-011	ARCTIC COMMUNITIES	TAKE ALL 2 OF THE FOLLOWING 2 MODULES, WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 47-011.			
	40-157-3	ARCTIC COMMUNITIES 1			
	40-158-3	ARCTIC COMMUNITIES 2			
SET 2 47-012	TROPICAL RAIN FOREST COMMUNITIES	TAKE ALL 2 OF THE FOLLOWING 2 MODULES, WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 47-012.			
	40-160-3	TROPICAL RAIN FOREST COMMUNITIES 1			
	40-161-3	TROPICAL RAIN FOREST COMMUNITIES 2			
SET 3 47-013	MOUNTAIN COMMUNITIES	TAKE ALL 2 OF THE FOLLOWING 2 MODULES, WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 47-013.			
	40-163-3	MOUNTAIN COMMUNITIES 1			
	40-164-3	MOUNTAIN COMMUNITIES 2			

COMPLETION CODE	MODULE NUMBER	MODULE NAME	NO OF TIMES TESTED	DATE STARTED	DATE FINISHED
SET 4 47-010	DESERT COMMUNITIES	TAKE ALL 2 OF THE FOLLOWING 2 MODULES, WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 47-010.			
	40-154-3	DESERT COMMUNITIES 1			
	40-155-3	DESERT COMMUNITIES 2			
	40-168-3	COMPARING COMMUNITIES			
	40-169-3	A PLANNED COMMUNITY			
	40-207-2	DEFINING HUMAN PROBLEMS			
	40-208-2	SEARCHING FOR INFORMATION			
	40-212-2	ATTACK A PROBLEM--NATURAL RESOURCES			
	40-209-2	YOUR STATE			
	40-206-2	USING MAPS			
	40-205-2	LEGENDS AND SYMBOLS			
	84-200	PLAN ACHIEVEMENT TEST			

FIGURE 8

PLAN

PROGRAM OF STUDIES 3266 EDWARDS BYRON

003 IMMACULATE HEART LEVEL 6 LANGUAGE ARTS FALL 1970

COMPLETION CODE	MODULE NUMBER	MODULE NAME	NO OF TIMES TESTED	DATE STARTED	DATE FINISHED
		THE FOLLOWING MODULES ARE SUGGESTED FOR YOUR PROGRAM OF STUDIES FOR THIS YEAR.			
	89-301	PLAN ORIENTATION			
	89-302	PLAN PROGRAM OF STUDIES			
	11-306-2	FABLES AND LEGENDS			
	13-306	INDEPENDENT READING--ANIMALS			
	11-307-3	FACTUAL INFORMATION, SUFFIXES			
	13-307	INDEPENDENT READING--ADVENTURE			
	11-308-2	UNCOMMON WORDS, CLASSIFICATION OF LITERATURE			
	13-308	INDEPENDENT READING--SPORTS			
	11-309-3	FACT OR FICTION, MAIN IDEAS			
	13-312	INDEPENDENT READING--HUMOR			
	11-311-3	FACT AND OPINION, SHORT NOVEL REPORT			
	13-313	INDEPENDENT READING--SCIENCE FICITON			
	11-312-3	SUMMARIZING, SYNONYMS AND ANTONYMS			
	13-314	INDEPENDENT READING--BIOGRAPHY			
	11-313-3	CHARACTERIZATION, WORD MEANING, ORAL READING			
	13-315	INDEPENDENT READING--HISTORICAL FICTION			
	11-314-2	SKIMMING, FACTUAL INFORMATION			
	13-281-2	QUESTION TRANSFORMATIONS			
	13-282-2	DERIVATIONAL SUFFIXES			
	13-283-2	ADVERBIALS--NEGATIVE TRANSFORMATION			
	11-315-3	MAIN IDEA AND SUPPORTING DETAILS, AUTHOR'S USE OF WORDS			
SET	17-047 REFERENCE	TAKE ANY 1 OF THE FOLLOWING 2 MODULES. WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 17-047.			
	13-351-1	THE WRITING OF POETRY			
	13-352-1	READING THE NEWSPAPER			
	11-316-2	SEQUENCING, DRAWING CONCLUSIONS AND CHARACTERIZATION			
	11-351-2	REFERENCE SKILLS			
	81-300	PLAN ACHIEVEMENT TEST			
	11-352-2	NOTE TAKING, OUTLINING AND REPORT WRITING			

COMPLETION CODE	MODULE NUMBER	MODULE NAME	NO OF TIMES TESTED	DATE STARTED	DATE FINISHED
SET	17-048 ANALYSIS	TAKE ANY 2 OF THE FOLLOWING 3 MODULES. WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 17-048.			
	11-353-2	MYSTERY STORIES 1--THE MYSTERIOUS SCHOOLMASTER			
	11-317-3	CRITICAL READING, ANALYZING A PLAY			
	11-318-2	POETRY--IMAGES, SOUND, AND MOOD			
SET	17-050 PLAYS	TAKE ANY 1 OF THE FOLLOWING 2 MODULES. WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 17-050.			
	10-382-2	PLAYS			
	10-383-1	STREETS AND STAGES			
	13-284-2	RELATIVE CLAUSE TRANSFORMATION			
	13-371-2	TRANSITIVE AND INTRANSITIVE--PASSIVE TRANSFORMATION			
	13-372-2	MORPHOLOGY--DERIVED SUFFIXES AND PREFIXES			
	81-252	PLAN ACHIEVEMENT TEST			
	10-373-3	ADVERTISING			
SET	17-049 IMAGE	TAKE ANY 3 OF THE FOLLOWING 3 MODULES. WHEN YOU ARE READY TO BEGIN WORK ON THIS SET, ASK YOUR TEACHER TO START SET NUMBER 17-049.			
	10-378-2	MOOD			
	10-380-2	PARAGRAPHS			
	10-390-2	COMMUNICATION HANGUPS			
	10-397-2	MAKING IT STRANGE			
	10-377-2	STRONG IMAGES			